Importation into the United States From Japan of Fresh *Gentiana lutea* for Consumption

Qualitative, Pathway-Initiated Pest Risk Assessment

December 1995

Agency Contact:

Biological Assessment and Taxonomic Support
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
4700 River Road, Unit 133
Riverdale, MD 20737-1236

A. Introduction

This pest risk assessment was prepared by the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture (USDA) to examine plant pest risks associated with the importation into the United States of fresh yellow gentian, *Gentiana lutea* from Japan. This is a qualitative pest risk assessment, that is, estimates of risk are expressed in qualitative terms such as high or low as opposed to numerical terms such as probabilities or frequencies.

International plant protection organizations (*e.g.*, North American Plant Protection Organization (NAPPO), International Plant Protection Convention (IPPC) of the United Nations Food and Agriculture Organization (FAO)) provide guidance for conducting pest risk analyses. The methods we used to initiate, conduct, and report this plant pest risk assessment are consistent with guidelines provided by NAPPO, IPPC and FAO. Our use of biological and phytosanitary terms (*e.g.*, introduction, quarantine pest) conforms with the *NAPPO Compendium of Phytosanitary Terms* (NAPPO 1995) and the *Definitions and Abbreviations* (Introduction Section) in *International Standards for Phytosanitary Measures, Section 1—Import Regulations: Guidelines for Pest Risk Analysis* (FAO 1995).

Pest risk assessment is one component of an overall pest risk analysis. The *Guidelines for Pest Risk Analysis* provided by FAO (1995) describe three stages in pest risk analysis. This document satisfies the requirements of FAO Stages 1 (initiation) and 2 (risk assessment).

The Food and Agriculture Organization (FAO, 1995) defines "pest risk assessment" as "Determination of whether a pest is a quarantine pest and evaluation of its introduction potential". "Quarantine pest" is defined as "A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled" (FAO, 1995; NAPPO, 1995). Thus, pest risk assessments should consider both the likelihood and consequences of introduction of quarantine pests. Both issues are addressed in this qualitative pest risk assessment.

This document presents the findings of our qualitative plant pest risk assessment. We have not described in detail our assessment methods or the criteria we used to rate the various risk elements. Details of our methodology and rating criteria can be found in our "template" document: ***Pathway-Initiated Pest Risk Assessment: Guidelines for Qualitative Assessments, version 4.0*** (USDA, 1995); to obtain a copy of our template, contact the individual named on the front of this risk assessment.

B. Risk Assessment

1. Initiating Event: Proposed Action

This pest risk assessment is commodity-based, and therefore "pathway-initiated"; we initiated the assessment in response to the request for USDA authorization to allow imports of a particular commodity presenting a potential plant pest risk. In this case, the importation of fresh yellow gentian, *Gentiana lutea*, grown in Japan into the U.S. is a potential pathway for introduction of plant pests. Quarantine 56 (7 CFR §319.56) provides a general regulatory authority for importation of fruits and vegetables.

Gentiana belongs to Gentianaceae family, which consists of about 70 genera and 750 species of cosmopolitan distribution, but most abundant in temperate regions, with some species planted for

ornamental purposes. The bitter taste of species in this family, resulting from terpenoids and iridoid compounds, acts as an effective deterrent to most phytophagous insects (Spencer, 1990). There are about 400 species of *Gentiana* consisting of perennial or annual herbs (Bailey, 1949).

2. Assessment of Weediness Potential of Yellow Gentian

Table 1 shows the results of our weediness screening for *Gentiana lutea*. These findings did not require us to initiate a pest-initiated pest risk assessment for *G. lutea*.

Table 1: Process for Determining Weediness Potential of Commodity

Commodity: Flowers, leaves and stem of *Gentiana lutea* L. - Yellow Gentian

Phase 1: Several speceis of *Gentiana* are native to the United States. Seeds or plants of yellow gentian are offfered by 3 U. S. companies.

Phase 2: Is the species listed in:

NO	*Geographical Atlas of World Weeds* (Holm, 1979)
NO	*World's Worst Weeds* (Holm, 1977)
NO	*Report of the Technical Committee to Evaluate Noxious Weeds; Exotic Weeds for Federal Noxious Weed Act* (Gunn & Ritchie, 1982)
YES	*Economically Important Foreign Weeds* (Reed, 1977)
NO	Weed Science Society of America list (WSSA, 1989)
YES	Is there any literature reference indicating weediness (*e.g.*, *AGRICOLA*, *CAB*, *Biological Abstracts*, *AGRIS*; search on "species name" combined with "weed").

Phase 3: Conclusion:

Two articles discussed the weed status of yellow gentian in Switzerland. Although weediness is a concern, yellow gentian is not considered a candidate for FNWA listing.

3. Previous Risk Assessments, Current Status and Pest Interceptions

There are no previous risk assessment (decision sheets) for *Gentiana lutea* from Asia. However, PPQ has interceptions from permit cargo entered for propagation and from plant material carried in baggage. The pest interceptions for 1971 - 1995 are as follows:

PEST	Where[1]	Total	Host
Tortricidae, sp. of.	04	1	*Gentiana* sp.
Frankliniella intonsa	01	1	*Gentiana* sp.
Septoria sp.	01	1	*Gentiana* sp.
Heliothis sp.	01	1	*Gentiana* sp.

4. Pest List: Pests Associated with *Gentiana* in Japan

Table 2 shows our pest list for Japanese *Gentiana*. We generated the list after review of the information sources listed in USDA (1995). The pest list includes limited information on the distribution of each pest, pest-commodity association, and regulatory history.

Table 2: Pest List - Japan *Gentiana* spp. for consumption

Scientific Name, Classification	Distribution[1]	Comments[2]	References
Fungi			
Septoria gentianae Theum.	JP	k,z	Stevenson, 1926
Septoria microspora Speg.	JP,US	c,f,k,z	Stevenson, 1926; Farr *et al.*, 1989
Uredo gentianae-formosanae Hirats.	JP	k,z	Parmelee, 1985
Arthropods			
Chromatomyia crawfurdiae (Sasakawa) (Diptera: Agromyzidae)	JP	k,z_i	Spencer, 1990
Chromatomyia gentianae (Hendel) (Diptera: Agromyzidae)	JP	k,z_i	Spencer, 1990
Endoclyta excrescens Butler (Lepidoptera: Hepialidae)	JP	k,z_e	Anon, 1980;
Incilaria bilineata Benson (Lepidoptera: Lycaenidae)	JP	k,z_e	Anon, 1980;
Rhizoglyphus echinopus Fumouze et Robin (Acarina: Acaridae)	JP,US	c,k,z_e	Anon, 1980; Metcalf & Metcalf, 1993

[1]Code 01 = baggage, 04 = permit cargo

Sclerorascus flavopictus Ishira (Homoptera: Cicadellidae)	JP	k,z_e	Anon, 1980
Nematoda			
Meloidogyne arenaria Neal	JP,US	a,c,k	Anon, 1980; Anon, 1984
Meloidogyne hapla Chitwood	JP,US	a,c,k	Anon, 1980; Anon, 1984
Pratylenchus penetrans (Coff) Chitwood et Oteifa	JP,US	a,c,k	Anon, 1980; Anon, 1984
Mollusca			
Deroceras reticulatum Muller	JP,US	c,f,z_e	Anon, 1980; Burch, 1960

[1] Distribution legend: JP = Japan; US = United States

[2] Comments:
- a = Pest mainly associated with a plant part other than the commodity.
- c = Pest does not meet the geographic or regulatory definition of a quarantine pest
- f = Pest occurs in the U.S. and is not currently subject to official restrictions and regulations (*i.e.*, not listed as actionable, and no official control program)
- k = Not specifically listed for host, but reported from other hosts in same plant genus
- z = Pest is known to attack or infect commodity and it would be reasonalble to expect the pest may remain with the commodity during processing and handling
- z_i = Internal: pest is known to attack or infect commodity and it would be reasonable to expect the pest may remain with the commodity during processing and shipping
- z_e = External: pest is known to attack or infest *Gentiana* and it would be reasonable to expect the pest may remain with the commodity during processing and shipping.

5. List of Quarantine Pests

Our list of quarantine pests for commercial shipments of above ground parts of *Gentiana lutea* from Japan is provided in Table 3. If any of these pests are intercepted on commercial (or any other) shipments of *Gentiana lutea*, quarantine action may be taken.

Table 3: Quarantine Pests: Japanese *Gentiana lutea* for consumption

Fungi	*Septoria gentianae* Theum.
	Uredo gentianae-formosanae Hirats.
Arthropods	*Chromatomyia crawfurdiae* (Sasakawa)
	Chromatomyia gentianae (Hendel)
	Endoclyta excrescens Butler
	Incilaria bilineata Benson
	Sclerorascus flavopictus Ishira

6. Quarantine Pests Likely to Follow Pathway (*i.e.*, Quarantine Pests Selected for Further Analysis)

A description of the criteria that pests must satisfy to be considered for further analysis can be found in USDA (1995). Following is a brief discussion for each of the quarantine pests/pest groups.

Fungi:

Septoria gentianae Theum. - is an invalid name and at this point we can only speculate as to the species identification. This fungus would be expected to behave similar to the other *Septoria* spp. found on *Gentiana*.

Uredo gentianae-forosanae Hirats. - this rust was originally classified in the genus *Pucciniastrum*, it was renamed *Uredo* because of the absence of described teliospores. The genus *Pucciniastrum* is heteroecious with the aecial infecting *Pinus* spp. and the uredial and teliospores infection dicots.

We are unable to assess the risk this rust poses because the host range in unknown and thus we are unable to determine the Consequences of Introduction or the Likelihood of Introduction. Therefore the pest risk assessment will end at this point.

It is suggested that the commodity not be permitted entry until a pest risk assessment can be completed.

C. References

Anonymous. 1980. Common Names of Economic Plant Diseases in Japan - Vol 2 - 2nd Edition - Vegetables, Flowers and Ornamental Plants, Forage grasses and Legumes, turfgrasses. The Phytopathological Society of Japan.

Anonymous. 1984. Distribution of Plant-Parasitic Nematode Species in North America. Society of Nematologist. 205 p.

Bailey, L. H. 1949. Manual of Cultivated Plants. Macmillan Publishing Company, N.Y. 1116 p.

Burch, J. B. 1960. Some Snails and Slugs of Quarantine Significance to the United States ARS Publication 82-1. Agricultural Research Service, USDA. 73 p.

FAO. 1995. International Standards for Phytosanitary Measures. Section 1 - Import Regulations: Guidelines for Pest Risk Analysis (Draft Standard). Secretariate of the International Plant Protection Convention of the Food and Agriculture Organization of the United Nations. Rome, Italy.

Farr, D. F., G. F. Bills, G. P. Chamuris and A. Y. Rossman. 1989. Fungi on Plants and Plant Products in the United States. American Phytopathological Society, St. Paul, Minnesota. 1252 p.

Gunn, C.R. and C. Ritchie. 1982. 1982 Report of the Technical Committee to Evaluate Noxious Weeds; Exotic Weeds for Federal Noxious Weed Act. (unpublished).

Holm, L.G., D.L. Plucknett, J.V. Pancho and J.P. Herberger. 1977. The World's Worst Weeds. University of Hawaii Press, Honolulu.

Holm, L.G., J.V. Pancho and J.P. Herberger and D.L. Plucknett. 1979. A Geographical Atlas of World Weeds. John Wiley and Sons, New York.

Metcalf, R. L. & R. A. Metcalf. 1993. Destructive and Useful Insects, Their Habits and Control. 5th Edition. p. 14.16.

NAPPO/FAO. 1995. NAPPO/FAO glossary of phytosanitary terms. North American Plant Protection Organization (NAPPO) and United Nations Food and Agriculture Organization (FAO). NAPPO Secretariate, Ottawa, Ontario, Canada.

Parmelee, J. A. 1985. Fungi Canadenses No. 297, *Uredo beringiana*. National Mycological Herbarium, Research Institute, Agriculture Canada. 2 p.

Quarantine plant pests database. 1995. Search completed in October. USDA, APHIS, PPQ (inhouse database).

Reed, C.F. 1977. Economically Important Foreign Weeds. Agriculture Handbook No. 498.

Spencer, K. A. 1990. Host Specialization in the World Agromyzidae (Diptera). Kluwer Academic Publishers. Netherlands. 444 p.

Stevenson, J. A. 1926. Foreign plant diseases. U.S. Dept. of Agriculture, Washington, D. C. 198 p.

USDA. 1995. Pathway-Initiated Pest Risk Assessment: Guidelines for Qualitative Assessments, ver 4.0. PPQ, APHIS. 15 p.

WSSA, 1989. Composite List of Weeds. Weed Science Society of America.